AMENDMENTS TO THE CLAIMS

Please replace all prior versions, and listings, of claims in the application with the following list of claims:

1. (Currently amended) A method for identifying an individual unit of a single polymer comprising

transiently moving the individual unit of the single polymer relative to a station, the identity of the individual unit being unknown,

detecting a non-ion conductance signal from less than all linked units in the polymer, arising from a detectable physical change in the unit or the station and

distinguishing said signal from signals arising from exposure of linked adjacent signal generating units of the single polymer to the station as an indication of the identity of the individual unit,

wherein the polymer is a nucleic acid or a polypeptide.

2. (Original) The method of claim 1, wherein the station is an interaction station and wherein individual units are exposed at the interaction station to an agent that interacts with the individual unit to produce a detectable electromagnetic radiation signal characteristic of said interaction.

3-114. (Cancelled)

115. (Currently amended) A method for characterizing a test polymer comprising,

obtaining polymer dependent impulses for a plurality of polymers,

comparing the polymer dependent impulses of the plurality of polymers,

determining the relatedness of the polymers based upon similarities between the polymer dependent impulses of the polymers, and

characterizing [[the]] a test polymer based upon the polymer dependent impulses of related polymers,

wherein the test polymer is labeled with a light emissive compound, [[and]]

wherein the polymer dependent impulses are obtained from less than all linked units after sequentially exposing linked units of each single polymer to an interaction station, and wherein the test polymer is a nucleic acid or a polypeptide.

116. (Original) The method of claim 115, wherein the plurality of polymers is a homogenous population.

117. (Original) The method of claim 115, wherein the plurality of polymers is a heterogeneous population.

118. (Original) The method of claim 115, wherein the polymer is randomly labeled.

119. (Original) The method of claim 115, wherein the polymer is a polymer of at least two different linked units, and wherein said at least two different linked units are labeled to produce different signals.

120. (Original) The method of claim 115, wherein the polymer is a nucleic acid.

121. (Original) The method of claim 120, wherein the obtained polymer dependent impulses include an order of polymer dependent impulses.

122. (Original) The method of claim 120, wherein the obtained polymer dependent impulses includes the time of separation between specific signals.

123. (Canceled)

124. (Original) The method of claim 120, wherein the obtained polymer dependent impulses include a number of polymer dependent impulses.

125-129. (Cancelled)

130. (Currently amended) A method for determining the order of units of a single polymer of linked units comprising:

(1) moving the single polymer linearly relative to a station,

(2) measuring a polymer dependent impulse generated as each of two individual units within the single polymer, each giving rise to a characteristic signal, sequentially pass by the station, wherein signals are detected from less than all linked units,

(3) repeating steps 1 and 2 for a plurality of similar polymers, and

(4) determining the order of at least the two individual units based upon the information obtained from said plurality of similar polymers,

wherein the polymers are labeled with a light emissive compound, and wherein the single polymer is a nucleic acid or a polypeptide.

131. (Original) The method of claim 130, wherein the station is a signal generation station.

132. (Original) The method of claim 130, wherein the station is an interaction station.

133. (Original) The method of claim 130, wherein step (2) comprises measuring an electromagnetic radiation signal generated.

134. (Original) The method of claim 130, wherein the plurality of similar polymers is a homogeneous population.

135. (Previously Presented) The method of claim 130, wherein the plurality of similar polymers is a heterogeneous population.

136. (Original) The method of claims 130, wherein the polymer is a nucleic acid.

137. (Currently amended) A method for analyzing a set of polymers, each polymer of said set being an individual polymer of linked units comprising:

orienting the set of polymers parallel to one another, and

detecting a polymer specific feature of said polymers by causing each polymer to pass linearly a signal generation station and sequentially detecting non-ion conductance signals from less than all linked units, generated as linked units of each single polymer pass said station,

wherein the set of polymers is a set of nucleic acids or a set of polypeptides.

138. (Original) The method of claim 137, wherein the polymers are oriented by applying an electric field to said polymers.

139. (Previously presented) The method of claim 137, wherein the polymer specific feature is an order of linked units in the polymers.

140. (Original) The method of claim 137, wherein the detecting step is performed simultaneously for said polymers.

141. (Original) The method of claim 137, wherein the detection step comprises measuring electromagnetic radiation signals.

142. (Original) The method of claim 137, wherein the detection step comprises causing the polymers to pass linearly relative to a plurality of signal generation stations, and detecting and distinguishing signals generated as said polymers pass said interaction stations.

143. (Original) The method of claim 137, wherein the polymers are a homogenous population.

144. (Previously Presented) The method of claim 137, wherein the polymers are a heterogeneous population.

145. (Original) The method of claim 137, wherein the polymers are randomly labeled.

146. (Original) The method of claim 137, wherein the orientation step is in a solution free of gel.

147. (Currently amended) A method for analyzing a set of polymers, each polymer of the set being an individual polymer of linked units, comprising:

orienting the set of polymers in an electric field,

simultaneously moving the set of polymers through defined respective channels, and

detecting a polymer specific feature as the polymers are moved through the channels by causing each polymer to pass linearly a signal generation station, and sequentially detecting non-ion conductance signals from less than all linked units, generated as linked units of each single polymer pass said station,

wherein the set of polymers is a set of nucleic acids or a set of polypeptides.

148. (Original) The method of claim 147 wherein the channels are nanochannels.

149. (Previously Presented) The method of claim 147, wherein the polymer specific feature is an order of linked units in the polymers.

150. (Original) The method of claim 147, wherein the detecting step is performed simultaneously for said polymers.

151. (Original) The method of claim 147, wherein the detection step comprises measuring electromagnetic radiation signals.

152. (Original) The method of claim 147, wherein the detection step comprises causing the polymers to pass linearly relative to a plurality of signal generation stations, and detecting and distinguishing polymer dependent impulses generated as said polymers pass said signal generation stations.

153. (Original) The method of claim 147, wherein the polymers are a homogenous population.

154. (Previously Presented) The method of claim 147, wherein the polymers are a heterogeneous population.

155. (Original) The method of claim 147, wherein the polymers are randomly labeled.

156. (Original) The method of claim 147, wherein the orientation step is in a solution free of gel.

157-160. (Cancelled)

161. (Previously presented) The method of claim 1, wherein the station is a signal generation station and the signal produced is a polymer dependent impulse.

162. (Currently amended) A method for identifying a unit specific marker bound to a polymer comprising

moving an individual polymer through an interaction station,

transiently exposing a labeled unit specific marker bound to less than all linked units in the individual polymer to the interaction station, and

detecting a non-ion conductance signal from the individual labeled unit specific marker and distinguishing said signal from signals arising from exposure of linked adjacent units of the individual polymer to the station,

wherein the signal is indicative of the presence of the polymer, and wherein the polymer is a nucleic acid or a polypeptide.

163. (Previously Presented) The method of claim 162, wherein the polymer is a polypeptide.

164. (Previously Presented) The method of claim 163, wherein the interaction station includes electromagnetic radiation and wherein the signal is a detectable electromagnetic radiation signal.

165. (Previously Presented) The method of claim 1, wherein the polymer is a polypeptide.

166. (Previously Presented) The method of claim 115, wherein the test polymer is a polypeptide.

167. (Previously Presented) The method of claim 130, wherein the polymer is a polypeptide.

168. (Previously Presented) The method of claim 137, wherein the set of polymers is a set of polypeptides.

169. (Previously Presented) The method of claim 147, wherein the set of polymers is a set of polypeptides.

170. (New) A method for characterizing a test polymer comprising

obtaining polymer dependent impulses for a plurality of polymers,

comparing the polymer dependent impulses of the plurality of polymers,

determining the relatedness of the polymers based upon similarities between the polymer dependent impulses of the polymers, and

characterizing a test polymer based upon the polymer dependent impulses of related polymers,

wherein the polymer dependent impulses are obtained from unit specific markers, labeled with a light emissive compound and bound to less than all linked units in each polymer, that are sequentially exposed to an interaction station, and wherein the test polymer is a nucleic acid or a polypeptide.

171. (New) A method for determining the order of unit specific markers bound to a single polymer of linked units comprising:

(1) moving the single polymer linearly relative to a station,

(2) measuring a polymer dependent impulse generated as each of two individual unit specific markers labeled with a light emissive compound giving rise to a characteristic signal and bound to less than all linked units in each polymer, sequentially pass by the station,

(3) repeating steps 1 and 2 for a plurality of similar polymers, and

(4) determining the order of the two individual unit specific markers based upon the information obtained from said plurality of similar polymers,

wherein the single polymer is a nucleic acid or a polypeptide.

172. (New) A method for analyzing a set of polymers, each polymer of said set being an individual polymer of linked units comprising

orienting the set of polymers parallel to one another, and

detecting a polymer specific feature of said polymers by causing each polymer to pass linearly a signal generation station and sequentially detecting non-ion conductance signals generated from unit specific markers of less than all of the linked units as each polymer passes the station,

wherein each polymer is a nucleic acid or a polypeptide.

173. (New) A method for analyzing a set of polymers, each polymer of the set being an individual polymer of linked units comprising

orienting the set of polymers in an electric field,

simultaneously moving the set of polymers through defined respective channels, and

detecting a polymer specific feature as the polymers are moved through the channels by causing each polymer to pass linearly a signal generation station, and sequentially detecting non-ion conductance signals from unit specific markers of less than all linked units, generated as each polymer passes the station,

wherein each polymer is a nucleic acid or a polypeptide.

174. (New) The method of claim 1, wherein the polymer is a nucleic acid.

175. (New) The method of claim 137, wherein the set of polymers is a set of nucleic acids.

176. (New) The method of claim 147, wherein the set of polymers is a set of nucleic acids.

177. (New) The method of claim 162, wherein the polymer is a nucleic acid.